

**Presentation to Education and
Workforce Development Summit
March 15, 2016**

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President,

AUVSI Hampton Roads Chapter





auvsi.org

The world's largest non-profit organization devoted exclusively to unmanned systems

- **Mission—“To promote and support the unmanned systems industry through communication, education and leadership”**
- **Vision—“To Improve Humanity By Enabling The Global Use Of Robotic Technology In Everyday Lives”**



auvsi.org

- **In its 41st Year**
- **~8,000 Individual Members**
 - ***Representing 2,200+ Organizations Worldwide***
- **600+ Corporate Members**
- **60+ Countries**

Representing Government, Industry, Academia



auvsi.org

- **Bringing the Unmanned Systems Community Together for Education and Networking**
- **Raising Awareness About Unmanned Systems**
- **Shaping Policy and Influencing Decision Makers**
 - **Advocacy**
 - **Publications**
 - **AUVSI Foundation**



- **Unmanned Systems Advocacy**
 - Representation on Capital Hill
 - Acceleration of FAA action for UAS Integration
- **FAA Modernization and Reform Act of 2012**
- **Intended to spur action on rulemaking**
 - Resulted in new actions by FAA UAS Program Office
 - 333 Exemptions
 - knowbeforeyoufly.org
 - NPRM in February 2015
 - Drone Registration

Representing All Unmanned Domains:



Representing All UXS Domains and Subsets

- Unmanned Aircraft Systems (UAS)
 - Unmanned Ground Vehicle Systems (UGV)
 - Unmanned Surface (Boat) Systems (USV)
 - Unmanned Underwater Vehicle Systems (UUV)
 - Driverless Cars . . .
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- Vehicles
 - Sensors / Payloads
 - Guidance & Navigation
 - Software & Communication
 - Support Equipment Items
 - Training, Logistics Support, Maintenance, Operations



XPONENTIAL Event New Orleans / May 2nd-5th





- STEM Outreach
- Education Programs
- Student Competitions



July 9-16, 2016
Founders Inn, VA Beach

AUVSI Chapters



- **30+ Regional Entities**
 - Located across the USA
 - Three International Chapters
 - *UK, Israel, Singapore*
- **Lifeline between AUVSI's DC Headquarters**
- **Organizations provide community support**
 - STEM Outreach
 - Meetings, Networking Opportunities
- **Local Chapters:** DC Capitol Chapter
 - Hampton Roads Chapter
 - South West Virginia Chapter

Chapter Activities

- **Annually: Roboboat, Int'l Student Competition**
 - At Founders Inn, VA Beach in early July each year
- **March '15: Workforce Development Conference**
 - Sec'y Jackson, Keynote
- **August '14: Congressman Rob Wittman**
- **March '13: Craig Woolsey, MAAP**
- **Hope for the Future:**
 - *Commonwealth-wide cooperation between Chapters*



New Civil + Commercial Applications



Benefits of UAS from Commercial Uses:

- Increased Jobs
- Increased Services
- Economic Growth:
 - \$10 Billion in 2015
 - \$80+ Billion in 2025
 - Areas to benefit most will be “Agriculture” States
- Maintain World Leadership Role in Aviation



Train *Which* Workforce?

- **System Integrators?**
- **Sensor Researchers?**
- **Software Developers?**
- **Service Providers?**
- **Peripheral Businesses:**
 - **Maintainers**
 - **Regulators**
 - **Trainers**
 - **others**

Industry Interviews

- **“Emerging Micro Business”**
 - **Advanced Aircraft Corporation**
 - Bill Fredericks, President
 - NASA “Greased Lightning” Commercialization
 - Peninsula Technology Incubator Client
- **“Small Business”**
 - **AVID, LLC**
 - Paul Gelhausen, President
 - Pre-eminent Aeronautical Engineering
 - Ducted Fan Technology
 - Strong ties to Virginia Tech, office in Blacksburg
- **“Big Business”**
 - **Boeing Corp.**
 - Dr. Michael Richey
- **“Consultant”**
 - John Lambert
 - Former AUVSI Chairman of the Board

Summary of Needs

- **Fredericks:** “Hiring Two General Engineers”
 - *“Multi-hattedness”*
- **Gelhausen:** “Business Development”
 - *Industry Needs Work!*
- **Richey:** “ENGINEERS”
- **Lambert:** “Maintainers”
- Workforce needs depend strongly on the size and vitality of the business. High growth should come from many small businesses that cannot afford specialists. Adaptable, skilled employees are needed, who can think and communicate.

BOEING'S APPROACH?

- Not waiting for Gov't or Academia for workers
- Investing heavily in workforce development
- Teach “System of Systems” / Eye on Big Picture
- Develop diverse, widely dispersed system teams
- Use online learning to track + reinforce learning
- Emphasize hands-on effort to reinforce learning
 - AeroSPACE drone development capstone program
- Drone popularity is means for attracting interest
- See the need to fill STEM pipeline much sooner
- Best investments in education may be at HS, MS

Challenge not limited to Unmanned

- Lack of engineering is now a societal problem
 - *But, particularly acute for Aerospace Engineering*
- Up to half of the current aerospace workforce will be eligible for retirement within five years
 - Strategies: *Reduce retirement, resignation rates?*
 - *Identify key STEM pipeline investment points*
- In 2008: Total of 3,727,156 students enrolled
 - 167,936 graduate from college in a “STEM” field
 - ***Only 67,092 were engineers***

Liberal Education vs. Trade School

- ***Thoreau, in the 1830s:***

“We seem to have forgotten that the expression, a liberal education, originally meant among the Romans one worthy of free men; while the learning of trades and professions by which to get your livelihood merely was considered worthy of slaves only.

- ***Technology du Jour***

- Employees will have 12-15 jobs in a lifetime
- Teach future employees how, not what to think

My own experience?

- **Drone manufacturer beginning in mid 1980s**
 - Multi-hatted workers—six months for cross training
 - As business grew, need for specialists increased
- **Primarily hired workforce from the Eastern Shore**
 - Purdue, K&L Microwave
 - *“Lots of different vegetables to make a good salad”*
 - *Cal Ripken—“Iron Man”*
- **Basic requirements:** *Employees who want to come to work and can work as a team and communicate, can be trained to create competitive products & services.*
- ***Build workforce accordingly, solve the right problem***

Contact Information

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Thank You!